University of Birmingham
School of Physics and Astronomy
Birmingham
B15 2TT
United Kingdom

w.farr@bham.ac.uk
+44 783 115 3237

November 25, 2014

Dr. Leslie Sage
The Macmillan Building
4 Crinan Street
London N1 9XW
United Kingdom

Dear Dr. Sage:

Please find enclosed a submission for Nature Letters entitled "The Occurrence of Earth-Like Planets Around Other Stars." The submission comprises approximately 1900 words of text and four figures (with captions). We do not at this time have any extended sections, supplementary information or supporting manuscripts. The requested brief paragraphs justifying publication in Nature and summarising the letter's appeal to a broad audience follow.

For the editor: The quantity $\eta_\oplus$ is of broad scientific interest. Its estimation is a chief goal of NASA's Kepler mission, but is complicated by the difficulty of detecting Earth-like planets about other stars. In addition to constraining $\eta_\oplus$ using the complete Kepler data set, we have modelled the distribution of planet orbital periods and radii and find that it is well-fit by a single Gaussian component. Our approach to reconstructing the period-radius distribution of planets is generally applicable to any survey with significant selection effects.

For the public: We use the latest results from NASA's Kepler mission to count how many planets of roughly Earth's size orbit stars like the Sun in our galaxy at about the same distance from their host stars as Earth. We find that about 4% of stars have a planet the size of Earth in an Earth-like orbit; with about 100 billion Sun-like stars in the galaxy, this means there are over 4 billion Earth-sized planets in one year orbits in our galaxy!

We thank you for your consideration.

Sincerely,

Will Farr